



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,261	09/26/2000	David W. Chew	3123-336	4850

7590 08/07/2003

David M. Sigmond  
MAXTOR CORPORATION  
2452 Clover Basin Drive  
Longmont, CO 80503

EXAMINER

PEREZ, GUILLERMO

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/670,261

**Applicant(s)**

CHEW, DAVID W.

**Examiner**

Guillermo Perez

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-17,19,20,25,26 and 31-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5,11-15 and 31-50 is/are allowed.
- 6) ☒ Claim(s) 6,7,9,10,16,17,19,20 and 51-70 is/are rejected.
- 7) ☒ Claim(s) 25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 6-7, 9-10, 16-17, 19-20, 51-62, and 64-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao (U. S. Pat. 6,040,650 which is a continuation in part of U. S. Pat. 5,982,069) in view of Sawada (U. S. Pat. 5,099,162).

Referring to claim 6, Rao discloses a voice coil for a disk drive comprising:  
a spiral winding of conductive material (figure 3) defining a flat band (figure 6) with a generally triangular shape (figure 3) with an open center, first and second active leg portions (31a, 31b) and an inactive leg portion (33),  
a first curved corner portion connecting the first and second active leg portions,  
a second curved corner portion connecting the first active leg portion with the inactive leg portion, and  
a third curved corner portion connecting the second leg portion with the inactive leg portion, the cross-sectional area of the band varying along its length (figure 3).

Referring to claim 7, Rao discloses that the cross-sectional area of each of the segments that define the inactive leg portion is smaller than the cross-sectional area of

Art Unit: 2834

each of the remaining segments that define the first and second active leg portions (*figure 3 of the '069 patent*).

Referring to claim 9, Rao discloses that the radius of curvature of the first curved corner portion is greater than the radius of curvature of the second and third curved corner portions (*figure 3 of the '650 patent*).

Referring to claim 10, Rao discloses that the radius of curvature of the second curved corner portion is equal to the radius of curvature of the third curved corner portion (*figure 3 of the '650 patent*).

Referring to claim 16, Rao discloses in combination with an actuator member in a disk drive,

a voice coil secured to a face of the actuator member, the voice coil comprising:

- a continuous spiral winding of wire defining a flat band with a generally triangular shape with an open center,
- first and second active leg portions and an inactive leg portion,
- a first curved corner portion connecting the first and second active leg portions,
- a second curved corner portion connecting the first active leg portion with the inactive leg portion, and
- a third curved corner portion connecting the second leg portion with the inactive leg portion, the cross-sectional area of the band varying along its length (*as explained for claim 6 above*).

Art Unit: 2834

Referring to claim 17, Rao discloses that the cross-sectional area of the segments that define the inactive leg portion is smaller than the cross-sectional area of the remaining segments (*as explained above for claim 7*).

Referring to claim 19, Rao discloses that the radius of curvature of the first curved corner portion is greater than the radius of curvature of the second and third curved corner portions (*as explained above for claim 9*).

Referring to claim 20, Rao discloses that the radius of curvature of the second curved corner portion is equal to the radius of curvature of the third curved corner portion (*as explained above for claim 10*).

Referring to claim 51, Rao discloses a voice coil for driving an actuator arm to various positions over a disk of a disk drive, the voice coil comprising:

a spiral winding of conductive material defining a band with a generally triangular shape having an open center, wherein the spiral winding includes:

a first active leg portion (31) defined by segments having a first cross-sectional area;

a second active leg portion (31) defined by segments having a second cross-sectional area;

an inactive leg portion (33) defined by segments having a third cross-sectional area, wherein

the third cross-sectional area is smaller than the first cross-sectional area, and the third cross-sectional area is smaller than the second cross-sectional area (figure 3 of the '069 document);

Art Unit: 2834

a first curved corner portion connecting the first and second active leg portions (31 in figure 1);

a second curved corner portion connecting the first active leg portion (31) and the inactive leg portion (33); and

a third curved corner portion connecting the second leg portion (31) and the inactive leg portion (33).

Referring to claim 52, Rao discloses that the spiral winding is a planar coil (see figure 3 of the '650 document).

Referring to claim 53, Rao discloses that the spiral winding, is a single-layer coil.

Referring to claim 54, Rao discloses that the spiral winding is a planar single-layer coil.

Referring to claim 55, Rao discloses that the spacing between each loop of the spiral winding remains substantially the same throughout the spiral winding (see figure 4 of the '069 reference).

Referring to claim 56, Rao discloses that the height of the spiral winding remains substantially the same throughout the spiral winding (figure 6 of the '650 document).

Referring to claim 57, Rao discloses that the spacing between each loop of the spiral winding remains substantially the same throughout the spiral winding, and the height of the spiral winding remains substantially the same throughout the spiral winding.

Art Unit: 2834

Referring to claim 58, Rao discloses that a width of the segments defining the inactive leg portion (33) is substantially smaller than a width of the segments defining the first and second active leg portions (31 in figure 3 of the '069 document).

Referring to claim 59, Rao discloses that a width of the segments defining the first active leg portion is the same as a width of the segments defining the second active leg portion (figure 3 of the '069 document).

Referring to claim 60, Rao discloses that the cross-sectional area of the segments defining the inactive leg portion is substantially smaller than the cross-sectional area of the segments defining the first and second active leg portions.

Referring to claim 61, Rao discloses that the cross-sectional area of the segments defining the first active leg portion is the same as the cross-sectional area of the segments defining the second active leg portion.

Referring to claim 62, Rao discloses a top insulating layer and a bottom insulating layer, wherein the spiral winding is sandwiched between the top and bottom insulating layers (Figure 4 of the '069 document).

Referring to claim 64, Rao discloses that the top insulating layer is secured to the spiral winding by an adhesive (epoxy see claim 4 of '069).

Referring to claim 65, Rao discloses that the bottom-insulating layer is secured to the spiral winding by an adhesive.

Referring to claim 66, Rao discloses that the top and bottom insulating layers are secured to the spiral winding by adhesives.

Art Unit: 2834

Referring to claim 67, Rao discloses a voice coil for driving an actuator arm to various positions over a disk of a disk drive, the voice coil comprising:

a spiral winding of conductive material defining a flat band with a generally triangular shape having an open center, wherein the spiral winding is adapted to interact with the magnetic field of permanent magnets of the disk drive, and the spiral winding is a continuous planar single-layer coil that includes:

a first active leg portion defined by segments having a first cross-sectional area;

a second active leg portion defined by segments having a second cross-sectional area;

an inactive leg portion defined by segments having a third cross-sectional area, wherein the third cross-sectional area is smaller than the first cross-sectional area, and

the third cross-sectional area is smaller than the second cross-sectional area;

a first curved corner portion connecting the first and second active leg portions;

a second curved corner portion connecting the first active leg portion and the inactive leg portion; and

a third curved corner portion connecting the second leg portion and the inactive leg portion.

Referring to claim 68, Rao discloses that the spacing between each loop of the spiral winding remains substantially the same throughout the spiral winding, and the height of the spiral winding remains substantially the same throughout the spiral winding.



Art Unit: 2834

Referring to claim 69, Rao discloses that the cross-sectional area of the segments defining the inactive leg portion is substantially smaller than the cross-sectional area of the segments defining the first and second active leg portions, and a cross-sectional area of the segments defining the first active leg portion is the same as a cross-sectional area of the segments defining the second active leg portion.

Referring to claim 69, Rao discloses a top insulating layer and a bottom insulating layer, wherein the spiral winding is sandwiched between the top and bottom insulating layers and secured to the top and bottom insulating layers by adhesives.

However, Rao does not disclose that the winding rotates.

Sawada discloses that winding can be made fixed or rotate (figures 8A and 9A) to provide torque to an external load.

It would have been obvious at the time the invention was made to modify the actuator of Rao to make it an either rotating winding actuator or a fixed winding actuator and still be capable of providing torque to an external load.

2. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rao (U. S. Pat. 6,040,650 which is a continuation in part of U. S. Pat.

5,982,069) in view of Sawada as applied to claim 62 above, and further in

view of Yamamoto (U. S. Pat. 4,728,390).

Rao and Sawada substantially teach the claimed invention except that they do not show that the first and second layers are polyimide.

Yamamoto discloses that the first and second layers are polyimide for the purpose of insulating the layers of conductive material (*column 3, lines 3-14*).

Art Unit: 2834

It would have been obvious at the time the invention was made to modify the coil of Rao and Sawada and provide it with the insulating material disclosed by Yamamoto for the purpose of insulating the layers of conductive material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select polyimide as the insulator since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

#### ***Allowable Subject Matter***

Claims 1-5, 11-15, and 31-50 are allowed.

Claims 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1-7, 9-17, 19, 20, 25, 26 and 31-70 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

Art Unit: 2834

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez  
August 4, 2003

*Thomas M. Riegler*  
8